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EXAMINER

PRENDERGAST, ROBERTA D

ART UNIT

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2628

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/039,187	Applicant(s) YU ET AL.	
	Examiner ROBERTA PRENDERGAST	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/19/2008 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 30-34 and 41-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New claims 30-34 and 41-46 contain new matter, i.e. P is greater than one (the specification as originally filed discloses only where P is greater than zero, see page 4, lines 8-9 and page 18, lines 24-26, while P can be greater than one it can also be no more than one since one is within the range of values for P that is taught).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 31 recites the limitation "the second NxM surface condition" in line 3.

There is insufficient antecedent basis for this limitation in the claim. Claim 30, from which claim 31 depends, does not recite a first or second NxM surface condition.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 24-34 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim(s) 24-34 is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

For example, claim 24 recites a method for interfacing with multiple surfaces within a computer-aided drawing environment, comprising: determining that a first surface of a drawing comprises a first plurality of curves constituting a $P \times 1$ surface condition, a $P \times 1$ surface condition being defined by a number of first curves equal to P and only one second curve, wherein P is an integer greater than zero; determining that a second surface of a drawing comprises a second plurality of curves constituting a first $N \times M$ surface condition, a first $N \times M$ surface condition being defined by a number of third curves equal to N and a number of fourth curves equal to M , wherein N and M are integers greater than one; converting the $P \times 1$ surface condition of the first surface into a second $N \times M$ surface condition to match the $N \times M$ surface condition of the second surface, the second $N \times M$ surface condition being defined by a number of fifth curves equal to N and a number of sixth curves equal to M , wherein N and M are integers greater than one; constructing an $N \times M$ surface under the second $N \times M$ surface condition; and modifying the second $N \times M$ surface to edit a drawing. The specification indicates at paragraph [0024] that these steps may be implemented as a computer program. The claims appear to be providing computer program constructs but providing modular program constructs does not transform an article or material, understood to be physical or tangible, since information/data is neither physical nor tangible. The claim limitations also do not appear to tie the method to another statutory category since application a computer program does not require the use of an apparatus, i.e. a drafter

may perform these steps to create and edit these drawings using nothing more than pencil and paper.

Dependent claims 25-29 also do not recite any further limitation that would tie the method to another statutory for the reasons cited above with regard to independent claim 24.

For example, claim 30 recites a method for interfacing with a surface within a computer-aided drawing environment, comprising: determining that a first surface of a drawing comprises a first plurality of curves constituting a $P \times 1$ surface condition, a $P \times 1$ surface condition being defined by a number of first curves equal to P and only one second curve, wherein P is an integer greater than one; in response to determining that the plurality of curves constitute a $P \times 1$ surface condition, converting the $P \times 1$ surface condition into an $N \times M$ surface condition by generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface and compatible with the number of first curves and the only one second curve that define the $P \times 1$ surface condition, the $N \times M$ surface condition being defined by a number of third curves equal to N and a number of fourth curves equal to M , wherein N and M are integers greater than one, wherein each of the third and fourth curves are of the same mathematical degree as the first and second curves to be compatible with the first and second curves; constructing an $N \times M$ surface under the $N \times M$ surface condition; and modifying the $N \times M$ surface to edit a drawing. The specification indicates at paragraph [0024] that these steps may be implemented as a computer program. The claims appear to be providing computer program constructs but providing modular program

constructs does not transform an article or material, understood to be physical or tangible, since information/data is neither physical nor tangible. The claim limitations also do not appear to tie the method to another statutory category since application a computer program does not require the use of an apparatus, i.e. a drafter may perform these steps to create and edit these drawings using nothing more than pencil and paper.

Dependent claims 31-34 also does not recite any further limitation that would tie the method to another statutory for the reasons cited above with regard to independent claim 30.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maya Unlimited 2.0, User's Guide © 1998-1999, 59 pages, in view of Konno et al. U.S. Patent No. 5619625.

Referring to claim 24, Maya Unlimited 2.0 teaches a method for interfacing with multiple surfaces within a computer-aided drawing environment, comprising:

determining that a first surface of a drawing comprises a first plurality of curves constituting a $P \times 1$ surface condition, a $P \times 1$ surface condition being defined by a number of first curves equal to P and only one second curve, wherein P is an integer greater than zero (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style; Page 34, Adding curves to Lofted surfaces; Page 43, Using the Birail 1 Tool, i.e. once an $N \times M$ surface has been generated via extrusion, lofting or the Birail Tools, it is understood that additional curves may be added/selected such that a first surface having a $P \times 1$ surface condition is determined);

determining that a second surface of a drawing comprises a second plurality of curves constituting a first $N \times M$ surface condition, a first $N \times M$ surface condition being defined by a number of third curves equal to N and a number of fourth curves equal to M , wherein N and M are integers greater than one (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style; Page 34, Adding curves to Lofted surfaces; Page 43, Using the Birail 1 Tool, i.e. once an $N \times M$ surface has been generated via extrusion, lofting or the Birail Tools, it is understood that additional curves may be added/selected such that a first surface having a $P \times 1$ surface condition is determined adjacent to a second $N \times M$ surface having a first $N \times M$ surface condition defined by a number of third curves equal to N and a number of fourth curves equal to M wherein N and M are integers greater than one);

converting the $P \times 1$ surface condition of the first surface into a second $N \times M$ surface condition, the second $N \times M$ surface condition being defined by a number of fifth curves equal to N and a number of sixth curves equal to M , wherein N and M are

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integers greater than one; constructing an $N \times M$ surface under the second $N \times M$ surface condition (Page 34, Adding curves to Lofted surfaces; Page 43, Using the Birail 1 Tool, i.e. curves are added adjacent to an $N \times M$ lofted surface such that a $P \times 1$ surface condition is identified and then an $N \times M$ surface is generated adjacent to the existing $N \times M$ surface wherein the second $N \times M$ surface is defined by a number of fifth curves equal to N and a number of sixth curves equal to M); and

modifying the second $N \times M$ surface to edit a drawing (Pages 28-30, Editing the extruded surface using manipulators; Page 39, Editing part of a Lofted Surface; Page 48-49, Editing the Single Birail in the Attribute Editor, i.e. all of the $N \times M$ surfaces generated via the Extrude, Loft and Birail Tools may be modified to edit a drawing).

Maya Unlimited 2.0 does not specifically teach wherein the second $N \times M$ surface is generated to match the first $N \times M$ surface as claimed.

Konno et al. teaches generating auxiliary curves that are substantially continuous with any adjoining surfaces of a surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated thus indicating that a second $N \times M$ surface generated adjacent to a first $N \times M$ surface would match the first $N \times M$ surface in order to ensure continuity between the adjacent surfaces).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Maya Unlimited 2.0 to include

the teachings of Konno et al. thereby providing a free-form surface generation method that has the following advantageous features; (1) joining smoothly two adjacent free-form surfaces sharing a boundary curve of any type (e.g., composite curve) by creating interior control points determined by the condition of connection on the boundary, which is derived from the condition of continuity on the boundary, which is determined by the boundary curve and other curves connected thereto; (2) generating free-form surfaces smoothly connected to each other by creating the control points for all the boundary curves and combining those control points; (3) generating a free-form surface in (2) which is smoothly joined to adjacent Gregory patches; (4) generating a free-form surface in (2) which is smoothly joined to adjacent rational boundary Gregory patches; (5) representing complex curve mesh by as few curves as possible in (2); (6) interpolating only one, if possible, surface into curve mesh in (2); and (7) keeping C^n continuity on a surface within the boundary curves (Konno et al. column 3, lines 8-27).

Referring to new claim 25, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of Claim 24, wherein converting the $P \times 1$ surface condition of the first surface into the second $N \times M$ surface condition further comprises generating at least one auxiliary curve that is compatible with the number of first curves and the only one second curve that define the $P \times 1$ surface condition (see page 20, second figure, i.e. the extruded auxiliary curves are known to be identical to the profile curve and thus have the same degree and number of knots thus indicating their compatibility with the profile curves from which they are extruded) but does not specifically teach generating at least one auxiliary curve that is

substantially continuous with any adjoining surfaces of a surface having the $P \times 1$ surface condition.

Konno et al. teaches generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 26, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of Claim 24, wherein converting the $P \times 1$ surface condition of the first surface into the second $N \times M$ surface condition further comprises replacing the $P \times 1$ surface condition with the second $N \times M$ surface condition (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style, i.e. a plurality of profile and guiding/path curves are extruded from the input profile and path curves in order to generate an $N \times M$ surface thereby creating an $N \times M$ surface condition to replace the $P \times 1$ surface condition).

Konno et al. teaches generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when

generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 27, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of claim 24 wherein converting the $P \times 1$ surface condition into an $N \times M$ surface condition comprises generating an $N \times M$ surface condition defined by the third and fourth curves such third and fourth curves are defined by mathematical equations all having an order no greater than mathematical equations defining the first and second curves (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style, i.e. extruding a plurality of curves from the input profile curve and path/guiding curve such that an $N \times M$ surface is generated/extruded having N profile curves and M guiding/path curves is understood to be generating N third curves and M fourth curves having an order no greater than the input profile and path curves from which they are being extruded).

Referring to claim 28, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method of claim 24 but does not specifically teach processing the first curves and the second curve so that each one of the first curves and second curve are compatible with each other of first curves and the second curve.

Konno et al. teaches processing the first curves and the second curve so that each one of the first curves and second curve are compatible with each other of first

curves and the second curve (Fig. 16; column 11, lines 57-65, i.e. it is understood that generating a curve mesh in which the various Gregory patches that correspond to the various first curves are joined together at the second boundary curves is processing the first curves and second curve so that they are compatible with each other).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 29, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches the method claim 24, but does not specifically teach modifying additional surfaces having the NxM surface condition to edit the drawing.

Konno et al. teaches further modifying additional surfaces having the NxM surface condition to edit the drawing (Fig. 16; column 11, lines 57-65, i.e. it is understood that generating a curve mesh in which the various Gregory patches that correspond to the various first curves are modified/joined together at the second boundary curves is modifying the additional surfaces having the NxM surface condition to edit the drawing).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 30, Maya Unlimited 2.0 teaches a method for interfacing with a surface within a computer-aided drawing environment, comprising:

determining that a first surface of a drawing comprises a first plurality of curves constituting a $P \times 1$ surface condition, a $P \times 1$ surface condition being defined by a

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number of first curves equal to P and only one second curve, wherein P is an integer greater than one (Pages 20-21, Extruding Surfaces; Pages 21-22, Choosing the extrude style; Page 42, Creating birail surfaces; Pages 43-49, Using the Birail 1 Tool, i.e. it is understood that the profile curve is the second curve and the first curves P are the two rail curves that are connected to the profile curve such that the surface defined by the profile curve and rail curves is a surface having a $P \times 1$ surface condition, wherein P is greater than one);

in response to determining that the plurality of curves constitute a $P \times 1$ surface condition, converting the $P \times 1$ surface condition into an $N \times M$ surface condition by generating at least one auxiliary curve that is compatible with the number of first curves and the only one second curve that define the $P \times 1$ surface condition, the $N \times M$ surface condition being defined by a number of third curves equal to N and a number of fourth curves equal to M , wherein N and M are integers greater than one (Pages 43-49, Using the Birail 1 Tool, i.e. the left hand figure on page 43 shows a 2×1 surface comprised of two rail/guiding curves and a single profile curve thus indicating a $P \times 1$ surface condition and the figures on the right and bottom show an $N \times M$ surface extruded from the 2×1 surface consisting of two rail/guiding curves and ten profile curves thus indicating that the $P \times 1$ surface condition is now an $N \times M$ surface condition), wherein each of the third and fourth curves are of the same mathematical degree as the first and second curves to be compatible with the first and second curves; constructing an $N \times M$ surface under the $N \times M$ surface condition (Pages 43-49, Using the Birail 1 Tool, i.e. the left hand figure on page 43 shows a 2×1 surface comprised of two

rail/guiding curves and a single profile curve thus indicating a $P \times 1$ surface condition and the figures on the right and bottom show an $N \times M$ surface extruded from the 2×1 surface consisting of two rail/guiding curves and ten profile curves thus indicating that the $P \times 1$ surface condition is now an $N \times M$ surface condition, since NURBS surfaces are created by default (see page 44 and 48, Output Geometry) and wherein the transform control allows the user to specify whether the profile curves swept along the rail curves are scaled proportionally or non-proportionally (see pages 44-45, Controlling the resulting transformation) then the third and fourth curves are understood to be mathematically filling the space of the surface plane defined by the profile and rail curves); and

modifying the $N \times M$ surface to edit a drawing (Pages 28-30, Editing the extruded surface using manipulators, i.e. the extruded $N \times M$ surface may be edited by dragging the manipulators thus indicating that the $N \times M$ surface is being modified to edit the drawing).

Maya Unlimited 2.0 does not specifically teach generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of a surface having the $P \times 1$ surface condition.

Konno et al. teaches generating at least one auxiliary curve that is substantially continuous with any adjoining surfaces of the first surface (Figs. 20-21; column 5, lines 20-29 and 35-48, i.e. the G^1 continuity of the boundary curve is checked at the endpoints and saved in memory and then used as the condition of continuity when generating auxiliary curves thereby ensuring that the auxiliary curve is continuous with any adjoining surfaces of the surface for which the auxiliary curve is generated).

The rationale for combining Maya Unlimited 2.0 with the teachings of Konno et al. as found in the motivation statement of claim 24 is incorporated herein.

Referring to claim 31, claim 31 recites all of the elements of claims 26 and 30 and therefore the rationale for the rejection of claims 26 and 30 are incorporated herein.

Referring to claim 32, claim 32 recites all of the elements of claims 27 and 30 and therefore the rationale for the rejection of claims 27 and 30 are incorporated herein.

Referring to claim 33, claim 33 recites all of the elements of claims 28 and 30 and therefore the rationale for the rejection of claims 28 and 30 are incorporated herein.

Referring to claim 34, claim 34 recites all of the elements of claims 29 and 30 and therefore the rationale for the rejection of claims 29 and 30 are incorporated herein.

Referring to claim 35, the rationale for claim 24 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches all of the elements of claim 35 that is similar in scope to claim 24 above and further teaches a software program for performing the method of claim 24 using the IRIX or Windows NT operating systems (see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system running the operating systems described).

Maya Unlimited 2.0 does not specifically teach a software program stored on a computer readable medium and operable, when executed on a processor to perform the method as claimed.

Konno et al. teaches a computer-aided design (CAD) system and apparatus having a user interface, receiving means, processing means and memory means for receiving and processing curve mesh data to generate surfaces and storing said surfaces in memory (see Fig. 1; column 4, lines 39-62; column 13-14, lines 24-18).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made that a computer aided drafting system capable of performing the method described would necessarily comprise a software program stored on a computer readable medium and operable, when executed on a processor, as part of a computer system having a display unit and an input device, to perform the methods of claim 24 as described above.

Referring to claim 36, claim 36 recites all of the elements of claims 25 and 35 and therefore the rationale for the rejection of claims 25 and 35 are incorporated herein.

Referring to claim 37, claim 37 recites all of the elements of claims 26 and 35 and therefore the rationale for the rejection of claims 26 and 35 are incorporated herein.

Referring to claim 38, claim 38 recites all of the elements of claims 27 and 35 and therefore the rationale for the rejection of claims 27 and 35 are incorporated herein.

Referring to claim 39, claim 39 recites all of the elements of claims 28 and 35 and therefore the rationale for the rejection of claims 28 and 35 are incorporated herein.

Referring to claim 40, claim 40 recites all of the elements of claims 29 and 35 and therefore the rationale for the rejection of claims 29 and 35 are incorporated herein.

Referring to claim 41, the rationale for claim 41 is incorporated herein, Maya Unlimited 2.0, as modified above, teaches all of the elements of claim 41 that is similar

in scope to claim 30 above and further teaches a software program for performing the method of claim 30 using the IRIX or Windows NT operating systems (see page 16, Installing Maya and Transition Guide for Maya IRIX Users; page 17, About This Book, i.e. it is understood that instructions for installing software and using the software with either the Windows NT operating system or IRIX indicates that the Maya software is installed in a computer system running the operating systems described).

Maya Unlimited 2.0 does not specifically teach a system comprising a computer system having a display unit and an input device and a computer readable medium coupled to the computer system, the computer readable medium comprising a software program operable to perform the method as claimed.

Konno et al. teaches a computer-aided design (CAD) system and apparatus having a user interface, receiving means, processing means and memory means for receiving and processing curve mesh data to generate surfaces and storing said surfaces in memory (see Fig. 1; column 4, lines 39-62; column 13-14, lines 24-18, i.e. it is understood that a CAD system having a user interface, receiving means, processing means and memory means for receiving and processing curve mesh data to generate surfaces is descriptive of a computer system that includes a display unit for displaying the generated surfaces, an input device for interacting with the user interface, and a computer readable medium coupled to the computer system since these devices are inherent to any computer-aided design (CAD) system).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made that a computer aided drafting system capable of

performing the method described would necessarily comprise a computer system having a display unit and an input device; a computer readable medium coupled to the computer system, the computer readable medium comprising a software program operable to perform the method of claim 30 as described above.

Referring to claim 42, claim 42 recites all of the elements of claims 25 and 41 and therefore the rationale for the rejection of claims 25 and 41 are incorporated herein.

Referring to claim 43, claim 43 recites all of the elements of claims 26 and 41 and therefore the rationale for the rejection of claims 26 and 41 are incorporated herein.

Referring to claim 44, claim 44 recites all of the elements of claims 27 and 41 and therefore the rationale for the rejection of claims 27 and 41 are incorporated herein.

Referring to claim 45, claim 45 recites all of the elements of claims 28 and 41 and therefore the rationale for the rejection of claims 28 and 41 are incorporated herein.

Referring to claim 46, claim 46 recites all of the elements of claims 29 and 41 and therefore the rationale for the rejection of claims 29 and 41 are incorporated herein.

Response to Arguments

Applicant's arguments filed 12/19/2008 have been fully considered but they are not persuasive.

Applicant argues, with respect to claim 24, that "The Advisory Action on page 2 states that 'the 'lofted surface' of Maya is the second surface having an NxM surface condition, while the 'side-curve extensions' are understood to be the first surface having a Px1 surface condition that is being converted to the second NxM surface;" and the

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Advisory Action further states on page 2 that it does not rely on Maya to teach "converting a Px 1 surface condition of the first surface," but rather the Examiner relies on Konno. This suggested combination, however, fails to teach the limitations of Claim 24. More specifically, the Examiner incorrectly relies on the "side-curve extensions" and the "lofted surface" of Maya to teach the claimed first and second surfaces at least because Maya fails to illustrate or describe the "lofted surface" as having one surface condition that differs from another surface condition of its own "extensions," which could then be converted to match. Indeed, even the term "extension" implies an extension or matching of any source conditions; and any subsequent conversion would thus result in a mismatch. Thus, Maya fails to cure the deficiencies of Konno and vice versa."

Examiner respectfully submits that Maya Unlimited 2.0 teaches wherein a first surface is comprised of Px1 curves and a second surface is comprised of NxM curves such that once an NxM surface has been generated via extrusion, lofting or the Birail Tools, it is understood that additional curves may be added/selected such that a first surface having a Px1 surface condition is determined, see Page 34, Adding curves to Lofted surfaces. Konno et al. teaches wherein two surfaces are converted such that additional curves and/or knots are added to a first surface until the number of curves and/or knots match the number of curves and/or knots of the second surface in order to ensure continuity across the two surfaces, see Fig. 16; column 11, lines 57-65.

Therefore the advantage to combining Maya Unlimited 2.0 with the teachings of Konno et al. is to provide a free-form surface generation system and method that has the following advantageous features; (1) joining smoothly two adjacent free-form surfaces

sharing a boundary curve of any type (e.g., composite curve) by creating interior control points determined by the condition of connection on the boundary, which is derived from the condition of continuity on the boundary, which is determined by the boundary curve and other curves connected thereto; (2) generating free-form surfaces smoothly connected to each other by creating the control points for all the boundary curves and combining those control points; (3) generating a free-form surface in (2) which is smoothly joined to adjacent Gregory patches; (4) generating a free-form surface in (2) which is smoothly joined to adjacent rational boundary Gregory patches; (5) representing complex curve mesh by as few curves as possible in (2); (6) interpolating only one, if possible, surface into curve mesh in (2); and (7) keeping C^n continuity on a surface within the boundary curves (Konno et al. column 3, lines 8-27).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant then argues, with respect to claim 24, that "Examiner has not pointed to any portions of the cited references, however, that would teach, suggest, or motivate one of ordinary skill in the art at the time of invention to incorporate the calculation of

cross boundary derivatives on all the boundary curves forming a face as disclosed in Konno with the extrusion method disclosed in Maya...” and “if it were sufficient for Examiners to merely point to a purported advantage of one reference and conclude that it would have been obvious to combine or modify that reference with other references simply based on that advantage (which, as should be evident from the case law discussed above, it certainly is not), then virtually any two or more references would be combinable just based on the fact the one reference states an advantage of its system. Of course, as the Federal Circuit has made clear and as discussed above, that is not the law. Accordingly, Applicants respectfully submit that the Examiner's conclusions set forth in the Office Action do not meet the requirements set forth in the M.P.E.P. and the governing Federal Circuit case law for demonstrating a prima facie case of obviousness.”

Examiner respectfully submits that the Maya Unlimited 2.0 reference is not merely an extrusion method as indicated by Applicant, but a system and method for creating and editing surfaces and is not merely limited to extrusion, see page 19, and further teaches wherein the edge blending option of first edge is used such that the constructed surface is tangent continuous to the surface underlying the profile, see page 46, Blending the profile curves, and wherein the Tangent Continuity Profile toggle lets tangent continuity be turned on or off for the profile curve, see page 49. Konno et al. teaches generating auxiliary curves that are substantially continuous with any adjoining surfaces of a surface, see Figs. 20-21; column 5, lines 20-29 and 35-48.

Therefore the advantage to combining Maya Unlimited 2.0 with the teachings of Konno et al. is to provide a free-form surface generation system and method that has the following advantageous features; (1) joining smoothly two adjacent free-form surfaces sharing a boundary curve of any type (e.g., composite curve) by creating interior control points determined by the condition of connection on the boundary, which is derived from the condition of continuity on the boundary, which is determined by the boundary curve and other curves connected thereto; (2) generating free-form surfaces smoothly connected to each other by creating the control points for all the boundary curves and combining those control points; (3) generating a free-form surface in (2) which is smoothly joined to adjacent Gregory patches; (4) generating a free-form surface in (2) which is smoothly joined to adjacent rational boundary Gregory patches; (5) representing complex curve mesh by as few curves as possible in (2); (6) interpolating only one, if possible, surface into curve mesh in (2); and (7) keeping C^n continuity on a surface within the boundary curves (Konno et al. column 3, lines 8-27).

Applicant's arguments with respect to new claims 25-46 have been considered but are moot in view of the new ground(s) of rejection.

Examiner respectfully submits that, at the time applicant argued against the references, applicant was arguing against limitations that had not been previously claimed and thus were not previously examined nor addressed in the previous office action and requests that applicant look to the office action provided above wherein these newly added claims and limitations have now been examined and addressed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERTA PRENDERGAST whose telephone number is (571)272-7647. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kee M Tung/
Supervisory Patent Examiner, Art Unit 2628

/Roberta Prendergast/
Examiner, Art Unit 2628
2/16/2009